Remarks/Arguments

There are no amendments to the specification or drawings herein.

In the claims, Claims 23-48 are pending and are rejected. Claims 1-22 were previously cancelled without prejudice. Claim 36 is amended. Entry of the amendment and reconsideration are respectfully requested.

Claims 36-48 rejected under 35 U.S.C. 101

Claims 36-48 are rejected under 35 U.S.C. 101 as not falling within one of the four statutory categories of invention. In particular, the Examiner contended that, "[w]hile the instant claim(s) recite a series of steps or acts to be performed, the claim(s) neither transform underlying subject matter nor positively tie to another statutory category that accomplishes the claimed method steps," and further contended, "[t]he claims recite process steps without being tied to an apparatus/system, such as a computer or processor."

Applicant has amended Claim 36 herein to recite that, "wherein arranging the candidate key-frames and selecting one of the candidate key-frames are performed by a key-frame extraction system, and wherein the key-frame extraction system outputs the selected one key-frame from each cluster as the key-frames for the video." Support for recitation of the "key-frame extraction system" and outputting the selected key-frames is provided at least by Figure 2 as well as Applicant's specification, beginning at Page 6, line 29, as originally filed. As amended herein, Claim 36 clearly recites a 'particular machine or apparatus' (i.e., the key-frame extraction system) to which the subject process is tied.

As such, amended Claim 36 cannot be construed to require no more than the human mind since a system (i.e., a *particular* machine or apparatus) is positively recited therein. Moreover, Claim 36 as amended, recites transformation of a data structure (i.e., the video from which candidate key-frames are selected) into selected key-frames that are output by the key-frame extraction system, "as the key-frames for the video." As noted by the Federal Circuit, "[a] claimed process is surely patent eligible under § 101 if: (1) it is tied to a particular machine or apparatus, or (2) it transforms a particular article into a different state or thing." *In re Bilski*, 545 F.3d at 954 (Fed. Cir. 2008) (*en banc*).

Applicant respectfully submits that amended Claim 36 overcomes the rejection under 35 U.S.C. 101 as this amended claim is clearly directed to statutory subject matter. Claims 37-48 are dependent from and include all of the limitations of amended Claim 36. Hence, Claims 37-48 are also directed to statutory subject matter. Applicant respectfully requests the Examiner reconsider and withdraw the rejection of Claims 36-48 under 35 U.S.C. 101.

Claims 23, 25, 26, 28-33, 36, 38, 39 and 41-46 rejected under 35 U.S.C. 102(e)

Claims 23, 25, 26, 28-33, 36, 38, 39 and 41-46 are rejected under 35 U.S.C. 102(e) as being anticipated by Toklu et al., U.S. Patent No. 6,549,643 B1 (hereinafter 'Toklu et al.'). Applicant respectfully traverses the rejection on the grounds that a *prima facie* case of anticipation has been neither established nor properly supported.

In particular, Toklu et al. fail to disclose, explicitly or implicitly, each element of the rejected claims. "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). "The identical invention must be shown in as complete detail as is contained in the ... claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). Moreover, Toklu et al. fail to disclose the claimed elements, "arranged as in the claim". *Lindemann Maschinenfabrik GmbH v. American Hoist & Derrick Co.,* 730 F.2d 1452, 221 USPQ 481, 485 (Fed. Cir. 1984). Also see *In re Bond*, 910 F.2d 831, 15 USPQ2d 1566 (Fed. Cir. 1990). Both the disclosure of all elements and the arrangement as stipulated by the claim are required by the Federal Circuit for establishing and supporting *prima facie* anticipation under 35 U.S.C. 102. Also see MPEP §2131 *Anticipation – Application of 35 U.S.C. 102(a), (b), and (e) [R-1]*, "TO ANTICIPATE A CLAIM, THE REFERENCE MUST TEACH EVERY ELEMENT OF THE CLAIM".

For example, regarding independent base Claim 23, Toklu et al. at least fail to disclose a key frame selector, "that obtains the corresponding candidate key-frames from each frame analyzer and arranges the candidate key-frames into a set of clusters," and further, "that selects one of the candidate key-frames from each cluster as a key-frame for the video," as is recited therein. Toklu et al. further do not disclose a set of frame analyzers, "that obtain the series of vide frames in parallel from the

video extractor," as recited in Claim 23. Regarding independent base Claim 36, Toklu et al. at least do not disclose, "arranging the candidate key-frames into a set of clusters," and, "selecting one of the candidate key-frames from each cluster as a key-frame for the video," as recited therein. Toklu et al. also fail to disclose, "selecting multiple sets of candidate key-frames," and, "performing in *parallel* a set of different analyses on each video frame in the video" (*emphasis* added).

In fact, Toklu et al. are silent on arranging key-frames into clusters and further never mention or even suggest a key-frame selector or another structure/module that provides the functionality of a key-frame selector as claimed and defined by Applicant. Moreover, the analysis performed according to Toklu et al. is strictly based on a selection of one type of analysis from among several alternative analyses and is not, and respectfully cannot be, construed as different analyses performed in parallel. In rejecting Applicant's claims in view of Toklu et al., the Examiner has respectfully mischaracterized and misconstrued the meaning of the reference disclosure.

For example, the Examiner contended that a key-frame elimination module (Toklu et al., Fig. 1, element 18) was equivalent to Applicant's claimed key-frame selector. Applicant respectfully disagrees. In particular, according to Toklu et al., the key-frame elimination module (18) processes key-frames, "to eliminate key-frames that are visually similar" (Col. 6, lines 32-33). "After the key-frames have been selected (steps 207 or 208) for each segment, a key-frame elimination process [e.g., performed by the key-frame elimination module (18)] … is performed (step 209) to eliminate the selected key-frames that are visually similar" (Toklu et al., Col. 7, lines 56-59). No other function for the key-frame elimination module (18) is disclosed by Toklu et al. beyond eliminating visually similar key-frames. Specifically, Toklu et al. never disclose, implicitly or explicitly, that the key-frame elimination module either 'arranges the candidate key-frames into a set of clusters' or 'selects one of the candidate key-frames from each cluster as a key frame for the video,' contrary to the Examiner's contention. Further, Toklu et al. never disclose, implicitly or explicitly, such 'arranging' or 'selecting' is or may be performed after key-frame selection by any of the types of analyses that are identified (e.g., Figs. 2A-2C).

In fact, Toklu et al. do not disclose or even suggest 'clusters' of key-frames. Toklu et al. do disclose 'video segments or shots' defined by segment boundaries which, "represent a contiguous recording of one or more video frames depicting a continuous action in time and space," (Toklu et al., Col. 5, lines 55-57). According to Toklu et al., the video segments are explicitly produced by, "a video segmentation module 12" (Col. 5, lines 39-40). The video segments are provided along with the input video data (as segment boundaries) to the key-frame selection module (13), according to Toklu et al. See for example, Col. 5, lines 61-65. As such, the 'segments' according to Toklu et al. are created *before* key-frames are selected. Thus, the 'segments' of Toklu et al. are not and respectfully cannot be equivalent to clusters produced by arranging candidate key frames, as claimed by Applicant.

Moreover, the Examiner has identified 'segments' disclosed by Toklu et al. as being *both*, "a series of video frames (*i.e., segments*) from a video," *and* as "a set of clusters" (Office Action, page 4) While the first interpretation may be arguably correct, Applicant respectfully submits that *both* interpretations cannot be true. The Examiner respectfully cannot use the same element or term disclosed by a reference to be equivalent to two completely different elements or terms in Applicant's claims.

Toklu et al. also never disclose processing video frames in parallel using a set of different analyses or presenting the video frames in parallel to a set of frame analyzers. Instead, Toklu et al. disclose a key frame selection (13) that employs only *one of several processes* (i.e., modules 15, 16 and 17), the selection which module is used being under control of a process selection module (14). Thus, instead of *parallel* processing or analyzing of frames by different analyses, Toklu et al. explicitly disclose a *selectable analysis* that employs only one type of analysis at a time. Such selectable analysis that employs only one type of analysis at time is not and respectfully cannot be construed as being a disclosure of parallel analysis, as recited in Applicant's Claims 23 and 36.

As further evidence that Toklu et al. are not disclosing parallel analysis, note that the flow diagram for selecting key-frames illustrated as Fig. 2A includes a step 202 that provides for selection of an 'appropriate operating level'. The selected appropriate operating level then determines whether step 203 (Fig. 2A), step 211 (Fig. 2B), step 226 or step 234 (Fig. 2C) is executed. Clearly, only one analysis type (e.g.,

beginning with one of steps 203, 211, 226, or 234) is or can be selected for a given set of input video data, according to Toklu et al. The selection of one of steps 203, 211, 226 or step 234 explicitly precludes the different analysis types described by Toklu et al. from receiving and processing video frames *in parallel*. In short, step 202 is a 'branch point' in the process, according to Toklu et al. As such, Toklu et al. are not and respectfully cannot disclose "a set of frame analyzers that obtain the series of video frames in parallel from the video frame extractor," as recited in Claim 23. Further, Toklu et al., do not disclose, "performing in parallel a set of different analyses on each video frame," as recited in Claim 36.

Hence, there is no support for a finding of *prima facie* anticipation with respect to base Claims 23 and 36 since Toklu et al. clearly fail in a plurality of instances to disclose *each and every element as set forth* in at least the base claims, as originally filed. Claims 25, 26, 28-33 are dependent from and include all of the limitations of base Claim 23. Claims 38, 39 and 41-46 are dependent from and include all of the limitations of base Claim 36. For at least the same reasons provided above regarding the base claims, Toklu et al. similarly fail to support a *prima facie* case of anticipation with respect to the rejected dependent claims. Toklu et al. simply do not disclose, explicitly or implicitly, each element of the claims at issue, arranged as in Applicant's Claims 23, 25, 26, 28-33, 36, 38, 39 and 41-46, as provided herein. Applicant respectfully requests the Examiner reconsider and withdraw the rejection of Claims 23, 25, 26, 28-33, 36, 38, 39 and 41-46 under 35 U.S.C. 102(e) in view of Toklu et al.

Claims 24, 27, 34, 40 and 47 rejected under 35 U.S.C. 103(a)

Claims 24, 27, 34, 37, 40 and 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Toklu et al., in view of Wu et al., U.S. Patent Application Publication No. 2003/0068087 A1 (hereinafter 'Wu et al.'). The Examiner admitted that Toklu et al. lacked explicit teaching of particular elements or limitations recited in Claims 24, 27, 34 and contended that Wu et al. disclosed the missing elements/limitations. Regarding Claims 24 and 27, the Examiner concluded that it would have been obvious, "to modify the teachings of Toklu with Wu to include audio analysis the motivation being to reduce the amount of image processing performed on the video data *[para. 26]*" (Office Action, pages 7 and 8). Regarding Claim 34, the Examiner concluded that it would have been obvious, "to modify the

teachings of Toklu with Wu to include face detection the motivation being human faces are most important users of video content *[para. 005]*" (Office Action, page 8). Regarding Claims 37, 40 and 47, the Examiner concluded these claims were rejected as above for respective ones of Claims 24, 27 and 34. Applicant traverses the rejection on the grounds that the Examiner respectfully erred in performing the *Graham* factual inquires (*Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966)) and has not presented and properly supported a *prima facie* case of obviousness of Applicant's Claims 24, 27, 34, 37, 40 and 47.

In particular, the Examiner provided no indication in the written record that the *Graham* factual inquires had been made and the results thereof have been applied. For example, Applicant submits that the Examiner at least failed to show the level of ordinary skill in the pertinent art and objective evidence relevant to the issue of obviousness. Without a level of ordinary skill being identified and supported by facts, it is not possible for the Examiner to properly provide objective evidence relevant to the issue of obviousness. Moreover, it is inappropriate for the Examiner to contend that, "[i]t would have been obvious to one of ordinary skill in the art …," to do anything with respect to the teachings of one or both of Toklu et al. and Wu et al. without a level of ordinary skill having first been established.

Furthermore, nothing either in the references themselves or in that provided by the Examiner establishes how the 'system and method for selecting key-frames of video data' disclosed by Toklu et al. is or could be modified to include or employ the various elements extracted by the Examiner from the disclosure of Wu et al. Nothing in the record establishes how Toklu et al. and Wu et al. may be combined to render Applicant's rejected claims *prima facie* obvious as proposed by the Examiner. Moreover, nothing in the record establishes there would be a reasonable expectation of success in the proposed combination of Toklu et al. and Wu et al. Without evidence in the record that such a substitution or modification is even possible and would lead to the result relied upon by the Examiner, the proposed modification of the disclosure of Toklu et al. using elements of Wu et al. lacks proper support for a finding of *prima facie* obviousness.

The Examiner suggests that a motivation for modifying the teachings of Toklu et al. by including the audio analysis of Wu et al. would be, "to reduce the amount of

image processing performed on the video data." However, according to Wu et al., "the audio-analyzing algorithm 501 is used to analyze the audio data 411 of the video data 41 so that audio data fragments with human voice included in the audio data 411 and their corresponding image data fragment in the image data 412 are screened" (paragraph [0027]). By screening the video data for frames associated with human voice sounds, Wu et al. are able to reduce, "the amount of the video data processed by the face-detection-analyzing algorithm 503" (paragraph [0026]). In other words, only when human voices are detected is there a need to process the video data using the face-detection-analyzing algorithm. As such, reduced amount of data processing, according to Wu et al., is only associated with face detection and is merely a result of deciding whether a video frame is likely to have a human face to detect. "Therefore, the audio data fragments of non-human sounds, such as noises or silence, and their corresponding image data fragments can be separated, and no process using the face-detection-analyzing algorithm is performed." Wu et al., paragraph [0027].

As such, combining the audio analysis of Wu et al. would not, "reduce the amount of image processing performed on the video data," of Toklu et al., contrary to the Examiner's contention. In particular, the image processing reduction realized by Wu et al. is only associated with face detection which Toklu et al. do not disclose using. In fact, adding audio analysis according to Wu et al. to the teaching of Toklu et al. would necessarily increase, not decrease, the amount of processing, albeit perhaps not image processing. The Examiner's motivation regarding a potential reduction in image processing is respectfully without merit.

The Examiner's motivation for combining the face detection of Wu et al. with the teachings of Toklu et al. is likewise respectfully without merit. In particular, the Examiner's stated motivation that, "human faces are most important users of video content," respectfully does not make sense. It is not clear how a human face (or faces) are or even can be important users of video content. Even if the Examiner meant to say that 'human faces are the most important features to users of the video content,' the motivation still respectfully lacks merit. Human faces are typically only one factor or feature among many that may be important in generating a key-frame from a video, a fact recognized by both Toklu et al. and Wu et al. Toklu et al. disclose motion detection, pixel-based frame detection, and color histogram

computation, as ways of generating key-frames. Moreover, Toklu et al. did not even consider face detection, explicitly or implicitly.

Wu et al. similarly disclose other analyses besides face detection (e.g., the shot-shift-analyzing algorithm 502) which would seem to argue against human faces being most important in selecting key-frames. Moreover, there is effectively no support within either of the references for a conclusion that, in either Toklu et al. or Wu et al., the presence of a human face in a video frame was the 'most important' feature (including, but not limited to Wu et al., paragraph [0005] cited by the Examiner). In fact, it is respectfully submitted that the Examiner appears to be using Applicant's invention as a template for a hindsight reconstruction of Applicant's claims. The court made clear, "[a] factfinder should be aware, of course, of the distortion caused by hindsight bias and must be cautious of argument reliant upon ex post reasoning." *KSR International Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 82 USPQ2d 1385, 1397 (2007).

Finally, the Examiner's rationale for combining the aforementioned references is respectfully essentially nothing more than a conclusory statement. The Federal Circuit has stated, and the Supreme Court has affirmed, that "rejections on obviousness cannot be sustained with mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." *In re Kahn*, 441 F.3d 977, 988, 78 USPQ2d 1329, 1336 (Fed. Cir. 2006). See also *KSR International Co. v. Teleflex Inc.*, cited *supra*, (quoting Federal Circuit statement with approval). Hence, there is insufficient support in the written record for a finding by the Examiner of *prima facie* obviousness.

Notwithstanding the above, the combination of Toklu et al. and Wu et al. further fail to disclose or suggest all of the claim limitations, contrary to the Examiner's contention. *In re Royka*, 490 F.2d 981, 985 (CCPA 1974). In particular, Toklu et al. at least fail to disclose or suggest all of the limitations of base Claim 23 and separately, base Claim 36, as is discussed above. Wu et al. fail to add the elements that are lacking in Toklu et al. with respect to the limitations of Applicant's base claims. Claims 24, 27 and 34 are dependent from and include all of the limitations of base Claim 23. Claims 37, 40 and 47 are dependent from and include all of the

limitations of amended base Claim 36. Therefore, the combination of Toklu et al. and Wu et al. fails to disclose or suggest all of the limitations of either the base Claims 23 and 36 or dependent Claims 24, 27, 34, 37, 40 and 47. A lack of disclosure or suggestion of claim limitations by the combined references still further defeats the *prima facie* case of obviousness with respect to the dependent claims.

Hence, the rejection of Claims 24, 27, 34, 37, 40 and 47 under 35 U.S.C. 103(a) as being unpatentable over Toklu et al. in view of Wu et al. lacks the elements necessary for proper support of a *prima facie* case of obviousness. Applicant respectfully requests that the Examiner reconsider and withdraw the rejection.

Claims 35 and 48 rejected under 35 U.S.C. 103(a)

Claims 35 and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Toklu et al., in view of Dimitrova et al., U.S. Patent No. 6,125,229 (hereinafter 'Dimitrova et al.'). The Examiner admitted that Toklu et al. lacked explicit teaching of particular elements or limitations recited in Claims 35 and 48 and contended that Dimitrova et al. disclosed the missing elements/limitations. The Examiner concluded that it would have been obvious to, "modify the teaching of Toklu with Dimitrova and include user input the reasoning being that user's desire should be taken into account." Applicant traverses the rejection on the grounds that the Examiner respectfully erred in performing the *Graham* factual inquires (*Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966)) and has not presented and properly supported a *prima facie* case of obviousness of Applicant's Claims 35 and 48.

In particular, the Examiner provided no indication in the written record that the *Graham* factual inquires had been made and the results thereof have been applied. For example, Applicant submits that the Examiner at least failed to show the level of ordinary skill in the pertinent art and objective evidence relevant to the issue of obviousness. Without a level of ordinary skill being identified and supported by facts, it is not possible for the Examiner to properly provide objective evidence relevant to the issue of obviousness. Moreover, it is inappropriate for the Examiner to contend that, "[i]t would have been obvious to one of ordinary skill in the art …," to do anything with respect to the teachings of one or both of Toklu et al. and Dimitrova et al. without a level of ordinary skill having first been established.

Furthermore, nothing either in the references themselves or in that provided by the Examiner establishes how the 'system and method for selecting key-frames of video data' disclosed by Toklu et al. is or could be modified to include or employ the various elements extracted by the Examiner from the disclosure of Dimitrova et al. Nothing in the record establishes how Toklu et al. and Dimitrova et al. may be combined to render Applicant's rejected claims *prima facie* obvious as proposed by the Examiner. Without evidence in the record that such a substitution or modification is even possible and there is a reasonable expectation of success in the combination that would lead to the result relied upon by the Examiner, the proposed modification of the disclosure of Toklu et al. using elements of Dimitrova et al. lacks proper support for a finding of *prima facie* obviousness.

Finally, the Examiner's rationale for combining the aforementioned references is essentially nothing more than a conclusory statement. Other than acknowledging a desirability of taking into account a "user's desire," the Examiner has not articulated any reasoning for the combination beyond identifying in Dimitrova et al. an element or limitation that is admittedly lacking in Toklu et al. when considering Applicant's claims. As noted above, "rejections on obviousness cannot be sustained with mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." *In re Kahn*, cited *supra*. In fact, it is respectfully submitted that the Examiner appears to be using Applicant's invention as a template for a hindsight reconstruction of Applicant's claims. See *KSR International Co. v. Teleflex Inc.*, cited *supra*. Hence, there is insufficient support in the written record for a finding by the Examiner of *prima facie* obviousness.

Notwithstanding the above, the combination of Toklu et al. and Dimitrova et al. further fail to disclose or suggest all of the claim limitations, contrary to the Examiner's contention. *In re Royka,* 490 F.2d 981, 985 (CCPA 1974) In particular, Toklu et al. at least fail to disclose or suggest all of the limitations of base Claim 23 and separately, base Claim 36, as is discussed above. Dimitrova et al. fail to add the elements that are lacking in Toklu et al. with respect to the limitations of Applicant's base claims. Claim 35 is dependent from and includes all of the limitations of base Claim 23. Claim 48 is dependent from and includes all of the limitations of base

Claim 36. Therefore, the combination of Toklu et al. and Dimitrova et al. fails to disclose or suggest all of the limitations of either the base Claims 23 and 36 or dependent Claims 35 and 48. A lack of disclosure or suggestion of claim limitations by the combined references still further defeats the *prima facie* case of obviousness with respect to the dependent claims.

Hence, the rejection of Claims 35 and 48 under 35 U.S.C. 103(a) as being unpatentable over Toklu et al. in view of Dimitrova et al. lacks the elements necessary for proper support of a *prima facie* case of obviousness. Applicant respectfully requests that the Examiner reconsider and withdraw the rejection.

In summary, Claims 23-48 were pending and were rejected. Claim 36 is amended herein. For the reasons provided above, Applicant submits that Claims 23-48, as provided herein, are in condition for allowance and respectfully requests that Claims 23-48 be allowed, and that the application be passed to issue at an early date.

Should the Examiner have any questions regarding the above, please contact the undersigned, J. Michael Johnson, Agent for Applicant, at telephone number (775) 849-3085 or Michael Czarnecki, Attorney for Applicant, Hewlett-Packard Company, at telephone number (281) 518-5127.

Respectfully submitted,

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